

## ABSTRACT OF THE DISCLOSURE

An improved process is disclosed for the selective disproportionation of toluene. The process preferably uses a disproportionation catalyst comprising a pentasil type zeolite such as MFI that is bound with aluminum-phosphate. Running the process at a  
5 toluene conversion greater than about 30 wt-% and at a hydrogen-to-hydrocarbon ratio less than 3.0, and especially a ratio of 0.1 to 1.0, improves the maximum yield of para-xylene. Optional periodic rejuvenation by increasing the hydrogen-to-hydrocarbon ratio removes some carbon deposits and restores catalyst activity. An inert diluent gas assists in selective pre-coking of the catalyst as well.